ABSTRACT

Peptides linked to carrier proteins are widely used to produce anti-peptide antibodies for experimental purposes. Since peptide vaccines are relatively inexpensive and anti-peptide antibodies are able to react specifically with the corresponding native protein in many instances, there is considerable interest in using peptide-carrier conjugates as vaccines against human and veterinary diseases including malaria. Peptides corresponding to known and predicted B and T cell epitopes of the antigens of human malaria parasite *Plasmodium falciparum* were synthesized. A 45kDa merozoite surface glycoprotein (GYMSSA), a precursor to the major merozoite surface antigen (PMMSA), an antigen present in the rhoptry-microneme complex (RAP), a serine rich antigen (SERA) present largely in the parasitophorous vacuole and a protein containing acidic and basic amino acid repeats also present largely in the parasitophorous vacuole (ABRA) were used in the study. The studies were performed in four stages. Firstly, peptides from GYMSSA and PMMSA were conjugated through 6-maleimido caproic acyl N-succinimide ester to bovine serum albumin. The conjugates were used to immunize Balb/c mice in saline and with different adjuvants. Freund's adjuvant, two muramyl dipeptide derivatives (murabutide and muramatide) and aluminium hydroxide. Three injections of antigen were given intra muscularly at 21d intervals and sera obtained after each injection. Antibody levels against peptides were measured by ELISA. Freund's adjuvant produced the highest titer of 10^{-4}. Antibody levels obtained with alum absorbed antigen reached titers of 10^{-3} – 10^{-4} while antigen administered in saline alone yielded titers of 10^{-3}. The synthetic adjuvants maramyl dipeptide derivatives did not produce higher antibody levels than